

REMARKS

The Office Action of January 25, 2008 has been reviewed and the comments therein carefully considered. Independent claim 21 has been added by this Amendment. Support for claim 21 can be found in previously presented claims 1 and 3 as well as in the last paragraph on page 3 of the specification as filed. Thus, no new matter has been added.

Restriction Requirement

The Office Action presented a Restriction Requirement between Group I, including claims 1-14 and drawn to a method of leaching a metal value from a heap of a metal-containing ore, and Group II, including claims 15-18 and drawn to a heap leaching operation. In a telephone conversation with Applicants' representative, a provisional election was made with traverse to prosecute the invention of Group I, claims 1-14. Applicants herein confirm this election of Group I, claims 1-14 for further prosecution on the merits. This election is made without traverse; claims 15-18 have been withdrawn. Applicants reserve the right to pursue the non-elected subject matter in a divisional application.

Rejection Under 35 U.S.C. §102(b)

Claims 1-4 and 12 stand rejected under 35 U.S.C. §102(b) as being anticipated by Brown (U.S. 4,960,584). In view of the following remarks, Applicants respectfully traverse this rejection.

Brown is directed to a method of heap leach mining and a system used to perform the method. The focus of Brown's method and system is to provide an improved and adjustable "emitter" for heap leach mining percolation systems that avoids the difficulties of clogging and flow rate adjustment of known emitters. (Brown, col. 1, lines 26-50). The emitters of Brown emit a leaching solution onto a heap bed in a controlled and substantially uniform rate (Brown, col. 4, lines 60-64).

Brown does not, however, discuss saturating the heap or establishing a plug flow of the leaching solution through the heap. Despite these deficiencies, the Office Action presumes that Brown's teachings include supplying the leaching solution at a flow rate sufficient to maintain plug flow so that the heap section is constantly saturated. (see Office Action, page 4). Applicants' respectfully submit that the teachings in Brown are insufficient to form the basis for a rejection under Section §102(b). While Brown sets forth flow rates of from 0.05 to 1.5 gal/hr/ft² (2 to 61 l/hr/m²), these flow rates do not necessarily cause

saturation of a section of heap or necessarily result in plug flow. Applicants define saturation, at line 7 of page 4 of the present specification, to mean that the leach liquor effectively floods the heap section so that substantially all of the voids between particles are filled with leach liquor. In order to assess whether Brown does in fact disclose saturating the heap, it would be necessary to have information about the structure of the heap, and particularly, the void spaces in the heap. This information is not found in Brown and thus it is left to speculation whether Brown discloses saturation of the heap or plug flow. A "possibility" or even "probability" that the cited art discloses a certain result or characteristic is not sufficient to establish that the cited art discloses that result or characteristic (MPEP §2112).

Claim 3 further defines Applicants' invention by reciting that the leach liquor is supplied as a downwardly flowing curtain that contacts the top surface of the heap as a line or a narrow band that extends across the top surface, with the curtain moving along the length of the heap either continuously or in a series of steps. Brown, on the other hand, discusses distributing the leaching solution onto the heap in a generally umbrella-shaped pattern, with the adjacent umbrella-shapes overlapping (Brown, col. 3, lines 51-54; Fig. 2).

Applicants do not agree that this teaching in Brown is equivalent to a moving curtain of solution that contacts the top surface of the heap as a line or a narrow band. In fact, a moving curtain of solution would not even be possible with the system disclosed in Brown. As seen in Figs. 1 and 2 of Brown, the solution distribution system (10) includes an array of pipes (14, 15) and tubes (16) with emitters (17) that are distributed to essentially cover the top surface of the heap. The tubes (16) form a series of spaced-apart, parallel lines across the top surface of the bed (Brown, col. 4, lines 52-64; Fig. 1). Once installed, the pipes, tubes and emitters are fixed in space, and leaching solution supplied to the pipes (14, 15) is discharged through the emitters (17) to form a series of simultaneous, umbrella-shaped streams of leaching solution. Because the tubes (16) cover essentially the entire top surface of the heap, there is no need to create a moving stream of solution. In fact, because of the complexity of the system in Brown, it would be unfeasible to create a moving curtain of leaching solution since displacement of the individual tubes would be essentially impossible. For at least these reasons, Brown fails to teach or suggest a downwardly flowing curtain of leaching solution that moves across the top surface of the heap, and one skilled in the art would not find this modification obvious.

Furthermore, Applicants have discovered that despite the complexity of the system in Brown that system does not allow for a consistent and thorough application of leaching solution across the entire top surface of the heap. Instead, the umbrella-shaped patterns and stationary emitters result in triangular-shaped areas of the heap top surface to receive less than adequate leaching liquor. Applicants' method, on the other hand, alleviates these problems with Brown and provides unique advantages not found in Brown.

Consequently, Applicants respectfully submit that Brown fails to anticipate or render obvious any of claims 1-4 and 12, and the outstanding rejection of these claims under 35 U.S.C. §102(b) should be reconsidered and withdrawn.

Rejection Under 35 U.S.C. §103(a)

Claims 5-11, 13 and 14 stand rejected under 35 U.S.C. §103(a) for obviousness over Brown. In view of the following remarks, Applicants respectfully traverse this rejection.

Claims 5-7 further define the method of claim 1 by specifying minimum flow rates of leaching liquor supplied to the top section of the heap to saturate the heap. The recited minimum flow rates vary from 15 l/hr/m² in claim 5 to 25 l/hr/m² in claim 7. Brown, on the other hand, discloses composite flow rates of between 0.05 gph/ft² to 1.50 gph/ft² (2 to 61 l/hr/m²) with each individual emitter having a flow rate of 0.2 gph to 6.0 gph. While the composite flow rate range disclosed by Brown partially overlaps with the flow rate ranges recited in claims 5-7, as discussed above, there is an inadequate teaching in Brown as to whether this disclosed flow rate range results in the saturation of the heap section. Thus, contrary to the statement in the Office Action, Brown does not disclose the same utility (i.e., saturation of the heap) over the entire disclosed flow range.

Claims 8-11 further define the method of claim 1 by specifying maximum time periods in which the leach liquor is supplied to the heap section. Applicants' have unexpectedly discovered that their method still generates proper leaching despite using a leaching supply period that is much less than the leaching supply period employed in other available sprayer-sprinkler leaching systems, like that in Brown. For example, as recited in claim 9, Applicants have surprisingly discovered that application of the leach liquor in accordance with claim 1 for 4 hours over a 24 hour period still provides acceptable leaching of the heap. Brown, on the other hand, fails to discuss or suggest possible leach liquor supply

times at all. What Brown explains beginning on line 65 of column 4 is the contact time between the leaching solution and the ore bed. The contact time is distinct from the application time. In any event, the contact times disclosed in Brown suggest an application time far exceeding the time periods recited in claims 8-11.

Claims 13 and 14 further limit claim 1 by adding limitations directed to retaining and minimizing run-off of the leach liquor supplied to the top surface of the heap section. To accomplish this, claim 13 recites the additional step of positioning a barrier on the top surface of the heap. Claim 14 includes the steps of forming a series of furrows or other suitable troughs for leach liquor and supplying the leach liquor into the furrows.

In the Office Action, it is asserted that the plastic sheet (13) in Brown satisfies each of these limitations. Applicants respectfully disagree. As is apparent from Fig. 1 of Brown, the plastic sheet (13) is disposed underneath, or opposite, the top surface of the heap section. The features of claim 13 are clearly distinguishable for at least the reason that the barrier of claim 13 is positioned on the top surface of the heap.

With respect to claim 14, Applicants fail to see where in Brown it is explained that furrows can be formed or that the leach liquor should be supplied into the furrows. The plastic sheet (13) "barrier" of Brown does not appear to include furrows, and, even if it did, there is no teaching or suggestion of supplying the leaching solution into the furrows.

Thus, Applicants submit that claims 5-11, 13 and 14 are not obvious over Brown and the outstanding rejection of these claims under 35 U.S.C. §103(a) should be reconsidered and withdrawn.

Newly Added Claim 21

Newly added claim 21 is directed to the leaching method of claim 1 where the leach liquor is supplied as a downwardly flowing curtain that contacts the top surface of the heap as a line or a narrow band less than 1 m wide that extends across the top surface and the curtain is moved along the length of the section of the heap continuously or in a series of steps. As described above, Brown fails to disclose a leaching method where a leach liquor is supplied as a downwardly flowing and movable curtain that contacts the top of the heap as a line or narrow band, much less a line or narrow band that is less than 1 m wide. Thus, Applicants submit that claim 21 is patentable over the cited art of record.

Conclusion

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For all of the foregoing reasons, Applicants submit that the pending claims are patentable over the cited documents of record and are in condition for allowance. Accordingly, Applicants respectfully request reconsideration of the rejections and allowance of pending claims 1-14 and 21.

Respectfully submitted,
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